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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re Application of: Thomas RUNKLER et al.	Conf. No.: 7423
Application No.: 09/553,956	Group Art Unit: 2172
Filed: April 21, 2000	Examiner: Pham, H.
Attorney Docket: 50277-0452 Client Docket: OID-1999-038-01	

For: SYSTEM AND METHOD FOR GENERATING DECISION TREES

SUPPLEMENTAL APPEAL BRIEF

Honorable Commissioner for Patents
Alexandria, VA 22313-1450

Dear Sir:

This Supplemental Appeal Brief is submitted in support of the Notice of Appeal dated November 18, 2004, supplemental to the Appeal Brief filed January 19, 2005, and in accordance with examiner suggestions made by Examiner Phan to Appellants' representative on March 23, 2005.

I. REAL PARTY IN INTEREST

Oracle International Corporation is the real party in interest.

II. RELATED APPEALS AND INTERFERENCES

Appellants are unaware of any related appeals and interferences.

III. STATUS OF THE CLAIMS

Claims 1-8, 10, 12-25, 27, and 29-36 are pending in this appeal, in which claims 9, 11, 26, and 28 have earlier been canceled. Claims 7-8 and 24-25 are allowed and claims 15 and 32 are indicated as allowable. This appeal is therefore taken from the final rejection of claims 1-6, 10, 12-14, 16-23, 27, 29-31, and 33-36 on May 20, 2004.

IV. STATUS OF AMENDMENTS

The amendments to claims 1, 3, 4, 6, 8, 9, and 15 filed August 25, 2003 and October 24, 2003 have been entered and are relied upon in this appeal. An amendment to claims 1, 7, 10, and 17 is presented herewith and has not yet been entered. However, entry of this amendment is believed proper under 37 CFR § 1.116 and the arguments in the present Appeal Brief do not depend in substance on which form of the claims 1, 7, 10, and 17 is presently active.

V. SUMMARY OF THE INVENTION

The invention is related to the use of a computer system for generating decision trees. (Specification, p. 10:5-6)

The Summary of the Invention presented in the Appeal Brief filed January 19, 2005 is incorporated by reference in its entirety herein.

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

The Grounds of Rejection section presented in the Appeal Brief filed January 19, 2005 is incorporated by reference in its entirety herein.

VII. ARGUMENT

A. CLAIMS 17 AND 34-36 ARE NOT ANTICIPATED OVER THE *BACKGROUND OF THE INVENTION.*

The Arguments section regarding the anticipation rejection presented in the Appeal Brief filed January 19, 2005 is incorporated by reference in its entirety herein.

B. CLAIMS 1-6, 10, 12-14, 16, 18-23, 27, 29-31, AND 33 ARE NOT OBVIOUS OVER *JANIKOW* AND OTHER APPLIED ART.

The Arguments section regarding the obviousness rejections presented in the Appeal Brief filed January 19, 2005 is incorporated by reference in its entirety herein.

VIII. CONCLUSION AND PRAYER FOR RELIEF

For the foregoing reasons, Appellants request the Honorable Board to reverse each of the Examiner's rejections.

Respectfully Submitted,

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March 29, 2005
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APPENDIX

1. (Previously Presented) A computer-implemented method for refining a node of a decision tree associated with a plurality of data characterized by a plurality of features, comprising:

selecting a feature from among the features characterizing the data associated with the node;

performing a cluster analysis along the selected feature to group the data into one or more clusters based on distances between the data and respective one or more centers of the one or more clusters;

constructing one or more arcs of the decision tree at the node respectively for each of the one or more clusters;

projecting the data in each of the clusters, wherein the projected data are characterized by the plurality of the features but for the selected feature; and

recursively performing the steps of selecting a feature and performing the cluster analysis on the projected data in each of the clusters.

2. (Original) The method according to claim 1, wherein the step of selecting the feature includes the steps of:

performing a plurality of cluster analyses along each of the features to calculate a maximal cluster validity measure, said maximal cluster validity measure corresponding to one of the features; and

selecting the one of the features that corresponds to the maximal cluster validity measure.

3. (Original) The method according to claim 2, wherein the step of performing a plurality of cluster analyses along each of the features to calculate a maximal cluster validity measure includes the performing the steps of:

for each of the features, performing a plurality of cluster analyses along said each of the features for a plurality of cluster numbers to calculate respective partition coefficients; and

determining the maximal cluster validity measure from among the partition coefficients.

4. (Original) The method according to claim 1, wherein the step of performing the cluster analysis includes the step of performing a fuzzy cluster analysis.

5. (Original) The method according to claim 4, wherein the step of performing the fuzzy cluster analysis includes the step of performing a fuzzy c-means analysis.

6. (Original) The method according to claim 1, wherein the step of performing the cluster analysis includes the step of performing a hard cluster analysis.

7. (Previously Presented) A computer-implemented method for refining a node of a decision tree associated with a plurality of data characterized by a plurality of features, comprising:

selecting a feature from among the features characterizing the data associated with the node;

performing a cluster analysis along the selected feature to group the data into one or more clusters;

constructing one or more arcs of the decision tree at the node respectively for each of the one or more clusters;

projecting the data in each of the clusters, wherein the projected data are characterized by the plurality of the features but for the selected feature; and

recursively performing the steps of selecting a feature and performing the cluster analysis on the projected data in each of the clusters,

wherein the step of performing the cluster analysis along the selected feature to group the data into one or more clusters includes the steps of:

calculating a domain ratio of a difference in domains limits of the data over a difference in domain limits of a superset of the data;

determining whether the domain ratio has a predetermined relationship with a predetermined threshold; and

if the domain ratio has the predetermined relationship with the predetermined threshold, then grouping the data into a single cluster.

8. (Original) The method according to claim 7, wherein the step of determining whether the domain ratio has the predetermined relationship with the predetermined threshold includes the step of determining whether the domain ratio is less than the predetermined threshold.

9. (Canceled)

10. (Previously Presented) A computer-implemented method for generating a decision tree for a plurality of data characterized by a plurality of features, comprising:

performing a plurality of cluster analyses along each of the features to calculate a plurality of respective partition coefficients based on membership functions of the data for one or more clusters in respective said cluster analyses;

selecting the one of the features corresponding to a maximal partition coefficient from among the partition coefficients;

subdividing the data into one or more groups based on the selected feature; and

building the decision tree based on the one or more groups.

11. (Canceled)

12. (Original) The method according to claim 10, wherein the step of performing the cluster analyses includes the step of performing a plurality of fuzzy cluster analyses.

13. (Original) The method according to claim 10, wherein the step of performing the fuzzy cluster analyses includes the step of performing a plurality of fuzzy c-means analyses.

14. (Original) The method according to claim 10, wherein the step of performing the cluster analyses includes the step of performing a plurality of hard cluster analyses.

15. (Original) The method according to claim 10, wherein the step of performing the cluster analyses includes the steps of:

calculating a domain ratio of a difference in domains limits of the data over a difference in domain limits of a superset of the data;

determining whether the domain ratio has a predetermined relationship with a predetermined threshold; and

if the domain ratio has the predetermined relationship with the predetermined threshold, then grouping the data into a single cluster.

16. (Original) The method according to claim 10, wherein building the decision tree based on the one or more groups includes the steps of:

projecting the data in each of the groups, wherein the projected data are characterized by the plurality of the features but for the selected feature; and

recursively performing the steps of selecting a feature, comprising selecting a new one of the features corresponding to a new maximal partition coefficient and subdividing the data into one or more new groups based on the selected new feature.

17. (Previously Presented) A computer-implemented method for generating a decision tree for a plurality of data characterized by a plurality of features, comprising:

performing a plurality of fuzzy cluster analyses along each of the features to calculate a maximal partition coefficient and a corresponding set of one or more fuzzy clusters, said maximal partition coefficient corresponding to one of the features;

selecting the one of the features corresponding to the maximal partition coefficient; and

building the decision tree based on the corresponding set of one or more fuzzy clusters.

18. (Previously Presented) A computer-readable medium bearing instructions for refining a node of a decision tree associated with a plurality of data characterized by a plurality of features, said instructions being arranged to cause one or more processors upon execution thereby to perform the steps of:

selecting a feature from among the features characterizing the data associated with the node;

performing a cluster analysis along the selected feature to group the data into one or more clusters based on distances between the data and respective one or more centers of the one or more clusters;

constructing one or more arcs of the decision tree at the node respectively for each of the one or more clusters;

projecting the data in each of the clusters, wherein the projected data are characterized by the plurality of the features but for the selected feature; and

recursively performing the steps of selecting a feature and performing the cluster analysis on the projected data in each of the clusters.

19. (Original) The computer-readable medium according to claim 18, wherein the step of selecting the feature includes the steps of:

performing a plurality of cluster analyses along each of the features to calculate a maximal cluster validity measure, said maximal cluster validity measure corresponding to one of the features; and

selecting the one of the features that corresponds to the maximal cluster validity measure.

20. (Original) The computer-readable medium according to claim 19, wherein the step of performing a plurality of cluster analyses along each of the features to calculate a maximal cluster validity measure includes the performing the steps of:

for each of the features, performing a plurality of cluster analyses along said each of the features for a plurality of cluster numbers to calculate respective partition coefficients; and

determining the maximal cluster validity measure from among the partition coefficients.

21. (Original) The computer-readable medium according to claim 18, wherein the step of performing the cluster analysis includes the step of performing a fuzzy cluster analysis.

22. (Original) The computer-readable medium according to claim 21, wherein the step of performing the fuzzy cluster analysis includes the step of performing a fuzzy c-means analysis.

23. (Original) The computer-readable medium according to claim 18, wherein the step of performing the cluster analysis includes the step of performing a hard cluster analysis.

24. (Previously Presented) A computer-readable bearing instructions for refining a node of a decision tree associated with a plurality of data characterized by a plurality of features, said

instructions being arranged to cause one or more processors upon execution thereby to perform the steps of:

selecting a feature from among the features characterizing the data associated with the node;

performing a cluster analysis along the selected feature to group the data into one or more clusters;

constructing one or more arcs of the decision tree at the node respectively for each of the one or more clusters;

projecting the data in each of the clusters, wherein the projected data are characterized by the plurality of the features but for the selected feature; and

recursively performing the steps of selecting a feature and performing the cluster analysis on the projected data in each of the clusters,

wherein the step of performing the cluster analysis along the selected feature to group the data into one or more clusters includes the steps of:

calculating a domain ratio of a difference in domains limits of the data over a difference in domain limits of a superset of the data;

determining whether the domain ratio has a predetermined relationship with a predetermined threshold; and

if the domain ratio has the predetermined relationship with the predetermined threshold, then grouping the data into a single cluster.

25. (Original) The computer-readable medium according to claim 24, wherein the step of determining whether the domain ratio has the predetermined relationship with the predetermined threshold includes the step of determining whether the domain ratio is less than the predetermined threshold.

26. (Canceled)

27. (Previously Presented) A computer-readable medium bearing instructions for generating a decision tree for a plurality of data characterized by a plurality of features, said instructions being arranged to cause one or more processors upon execution thereby to perform the steps of:

performing a plurality of cluster analyses along each of the features to calculate a plurality of respective partition coefficients based on membership functions of the data for one or more clusters in respective said cluster analyses;

selecting the one of the features corresponding to a maximal partition coefficient from among the partition coefficients;

subdividing the data into one or more groups based on the selected feature; and

building the decision tree based on the one or more groups.

28. (Canceled)

29. (Original) The computer-readable medium according to claim 27, wherein the step of performing the cluster analyses includes the step of performing a plurality of fuzzy cluster analyses.

30. (Original) The computer-readable medium according to claim 27, wherein the step of performing the fuzzy cluster analyses includes the step of performing a plurality of fuzzy c-means analyses.

31. (Original) The computer-readable medium according to claim 27, wherein the step of performing the cluster analyses includes the step of performing a plurality of hard cluster analyses.

32. (Original) The computer-readable medium according to claim 27, wherein the step of performing the cluster analyses includes the steps of:

calculating a domain ratio of a difference in domains limits of the data over a difference in domain limits of a superset of the data;

determining whether the domain ratio has a predetermined relationship with a predetermined threshold; and

if the domain ratio has the predetermined relationship with the predetermined threshold, then grouping the data into a single cluster.

33. (Original) The computer-readable medium according to claim 27, wherein building the decision tree based on the one or more groups includes the steps of:

projecting the data in each of the groups, wherein the projected data are characterized by the plurality of the features but for the selected feature; and

recursively performing the steps of selecting a feature, comprising selecting a new one of the features corresponding to a new maximal partition coefficient and subdividing the data into one or more new groups based on the selected new feature.

34. (Original) A computer-readable medium bearing instructions for generating a decision tree for a plurality of data characterized by a plurality of features, said instructions being arranged to cause one or more processors upon execution thereby to perform the steps of:

performing a plurality of fuzzy cluster analyses along each of the features to calculate a maximal partition coefficient and a corresponding set of one or more fuzzy clusters, said maximal partition coefficient corresponding to one of the features;

selecting the one of the features corresponding to the maximal partition coefficient; and

building the decision tree based on the corresponding set of one or more fuzzy clusters.

35. (Previously Presented) The method of claim 17 wherein the maximal partition coefficient is based on membership functions of the data for the set of one or more clusters.

36. (Previously Presented) The computer-readable medium of claim 34, wherein the maximal partition coefficient is based on membership functions of the data for the set of one or more clusters,